

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

- 1 1. An intrinsically safe sensor signal processing circuit, comprising:
2 a sensor means to measure a physical value in a hazardous area;
3 a safety barrier means mounted in a non-hazardous area or in an
4 enclosure housing in the hazardous area;
5 a plurality of current limiting resistors located inside of the safety
6 barrier, connected in series with the sensor;
7 a first operational amplifier located inside of the safety barrier, as a
8 driver of the sensor signal, coupling a first group of the current limiting
9 resistors between an output and an inverting-input of the first operational
10 amplifier; and
11 a second operational amplifier located inside of the safety barrier,
12 as a feeder of the sensor signal, coupling a second group of the current
13 limiting resistors between an output and an inverting-input of the second
14 operational amplifier.
- 1 2. An intrinsically safe sensor signal processing circuit, comprising:
2 a sensor means to measure a physical value in a hazardous area;
3 a safety barrier means mounted in a non-hazardous area or in an
4 enclosure housing in the hazardous area; and
5 a plurality of blocking capacitors for current limiting located inside
6 of the safety barrier, connected in series with the sensor.
- 1 3. An intrinsically safe sensor signal processing circuit, comprising:
2 a sensor means to measure a physical value in a hazardous area;
3 a safety barrier means mounted in a non-hazardous area or in an
4 enclosure housing in the hazardous area;

5 a plurality of blocking capacitors for current limiting located inside
6 of the safety barrier, connected in series with the sensor;
7 a first operational amplifier located inside of the safety barrier, as a
8 driver of the sensor signal, coupling a first group of the blocking capacitors
9 between an output and an inverting-input of the first operational amplifier;
10 and
11 a second operational amplifier located inside of the safety barrier,
12 as a feeder of the sensor signal, coupling a second group of the blocking
13 capacitors between an output and an inverting-input of the second
14 operational amplifier.

1 4. The sensor signal processing circuit of claim 1, wherein a reference
2 resistor is connected between a feeding line directly coupled from the
3 sensor and a current limiting resistor coupled the output of the second
4 operational amplifier in order to generate an output sensor signal as a
5 voltage value by negative feedback.

1 5. The sensor signal processing circuit of claim 3, wherein a reference
2 resistor is connected between a feeding line directly coupled from the
3 sensor and a blocking capacitor coupled to the output of the second
4 operational amplifier in order to generate an output sensor signal as a
5 voltage value by negative feedback.